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ABSTRACT

This report describes a program for improving memory retention through instructional and motivational techniques in elementary art. Targeted population consisted of third grade students at three sites in a middle class suburb of a large midwestern city. The problems of memory retention were documented through teacher pre-surveys and art memory pre-tests. Analysis of the literature showed two categories of probable causes that contribute to the lack of student memory retention: instructional causes and physical causes of students' environment. Instructional causes include a lack of diverse teaching styles and inadequate teaching methods which lead to insufficient student knowledge, motivation, and attention. Physical causes of students' environment include stress in family life and diet. The teacher researchers focused on the instructional techniques. A review of solutions suggested by theorists and educators resulted in using the following instructional techniques: increasing attention, providing motivation, adapting instruction, and making information more meaningful by using mnemonics, music, and rewards. Data from the intervention was to be gathered by weekly reviews, rubrics, a semester review, and teacher post-surveys. These assessment tools were to help determine if the interventions of using instructional and motivational techniques increased memory retention in the art classroom. Post-intervention data gathered showed a significant increase in improving student memory retention in the elementary art class. Appended are surveys, posttests, semester reviews, rubrics, and other instructional materials. (Contains 26 references, 17 figures, and 1 table.) (Author/BT)

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USING INSTRUCTIONAL AND MOTIVATIONAL TECHNIQUES IN THE ART CLASSROOM TO INCREASE MEMORY RETENTION

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An Action Research Project Submitted to the Graduate Faculty of the

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Abstract

This report describes a program for improving memory retention through instructional and motivational techniques in elementary art. The targeted population consists of third grade students in a middle class suburb of a large midwestern city. The problems of memeory retention were documented through teacher pre- surveys and art memory pre-tests.

Analysis of the literature shows two categories of probable causes that contribute to the lack of student memory retention: instructional causes and physical causes of students' environment. The instructional causes include a lack of diverse teaching styles and inadequate teaching methods which lead to insufficient student knowledge, motivation and attention. The physical causes of students' environment include stress in family life and diet. The teacher-researchers decided to focus on the instructional techniques.

A review of solutions suggested by theorists and educators resulted in the choice of using instructional techniques. These techniques include increasing attention, providing motivation, adapting instruction, and making information more meaningful by using mnemonics, music and rewards.

Data from the intervention will be gathered by weekly reviews, rubrics, a semester review, and teacher post-surveys. These assessment tools will help determine if the interventions of using instructional and motivational techniques increase memory retention in the art classroom.

The post-intervention data gathered showed a significant increase in improving student memory retention in the elementary art class.

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CHAPTER 1

PROBLEM STATEMENT AND CONTEXT

General Statement of the Problem

The students of the targeted art classes exhibit an inability to recall relevant information from week to week. This leads to constantly teaching the subject matter and procedures over for each lesson. Valuable studio production time is then lost. Evidence for the existence of this problem includes memory pretests and posttests, and art teacher surveys.

Immediate Problem Context

The research in this paper has been based on school Sites A, B, and C. All of the sites are located within a residential subdivision in a northwest suburb of a large midwestern city.

Site A is a brick, two-story building, and the oldest school in the district, being built in 1898. It occupies half of a square block with a large wooden playground structure and grassy play area on the west side of the property, and a blacktop play area in front of the school. The school has grades kindergarten through sixth with the enrollment at 431 students. Twenty-one classrooms are located inside of the building and there is one mobile classroom.

The students' ethnic backgrounds are 29% White, 10% Black, 60% Hispanic and 1% Asian/Pacific Islander. Fifty-eight percent of the students are from low-income families and 45% of all families are limited-English-proficient. There is a 95.2% attendance rate with 37%

mobility and 1% chronic truancy. A strong partnership is present between the school and a nearby hospital. Students have access to the Internet through the use of classroom computers. Site B was opened in 1954, and is a one-story brick building with five mobile classrooms. The campus includes a large open field, a new playground, and garden which are maintained by volunteers. Students in grades kindergarten through sixth makes up a total enrollment of 676, with a 55.8% White, 7.5% Black, 33.6% Hispanic, and a 3.1 % Asian population. Thirty-seven percent of students are classified as low-income, and 25% are limited-English-proficient. The attendance rate is 95.6% with 21.4% mobility.

Site C was established in August of 1996 and is a two-story brick building with three mobile classrooms. On the east side of the building is a single-story addition containing six classrooms and two additional student bathrooms. Playground equipment is located to the south of the building and a blacktop area to the west. Behind the mobile classrooms are a large soccer field and baseball diamond. The local park district as well as community groups use the facilities after regular school hours. The building has a large computer lab and a central video system. Each classroom has at least one computer available for student and teacher use.

The total enrollment of 821 students consists of kindergarten through grade six. There are 35 self-contained classrooms at this site. The racial ethnic background is 70.3% White, 6.9% Black, 16.8% Hispanic, and 6% Asian/Pacific Islander. Attendance for Site C is 96.1% with a mobility rate of 13%. There is no chronic truancy problem at this site. Low-income is reported at 13.6%. Limited-English-proficiency is 22.9%, which is higher than the district average of 20.4% (1999 State School Report Card).

Classroom

Site A holds a class size of approximately 25 students in grades one through six, and 20 students in kindergarten. Each room holds at least one computer which is accessible to the Internet and is hooked up to a television and VCR. There is an after school program which coordinates activities for children while they wait for a parent/guardian to pick them up. Title I, Bilingual Title I, learning disability (LD), speech and special education services are also available at this site.

Twenty classes are self-contained, and one classroom with an aide services children with behavior disorders. Mainstreaming bilingual students is common in grades four and above. In the building are 19 female classroom teachers, and one male, six teacher assistants, two individual aides, two teachers of learning disabled students, a librarian, a physical education teacher, an art teacher and two music teachers. There is a principal, secretary, clerical aid, bilingual liaison, social worker, and janitor in this school. Physical education classes are held in the gymnasium, while the art and music teachers share a classroom and travel part-time with a cart.

The average class size for Site B is 21 students at the kindergarten level and 25 students in the intermediate grades. Every classroom is equipped with at least two computers, a color printer, VCR and a television which can be connected to the Internet. Additional computers are used in kindergarten and first grade for an early reading program. There are two self-contained special education classrooms: one for students with behavior disorders and one for students with mental disabilities. The staff is comprised of 32 teachers, one principal, three secretaries, twelve

teachers' assistants, two ld specialists, a social worker, a librarian, and head custodian. Females make up 86% of the staff which is 3.7% Black, 2% Asian, 16.9% Hispanic, and 77.4% White. At Site C, the average class size is 24 students. Each class attends music, and physical education outside of their main classroom. The art teacher moves from classroom to classroom teaching from a mobile cart. Students are taken out of the classroom for individual speech therapy and social work services. Special education resources are available to students within the classroom as well as on individual basis, depending upon their Individual Education Plan (IEP). Orchestra and chorus are also offered to students in grades four through six. The commons, which is a multipurpose room, is used to serve lunch as well as hold small assemblies. Local community groups and the Parent Teacher Organization also use this commons area after hours for various activities.

There are 32 self-contained classroom teachers, two aides and two administrators for the building. An additional seven teachers provide students with art, music, and physical education. The support staff includes two secretaries, a bilingual liaison, school nurse, speech therapist, social worker, and three special education resource personnel.

The Surrounding Community

The school district in which all three schools are located is the second largest school district in the state. It consists of 38 elementary schools, seven middle schools, and four high schools. The district encompasses 90 square miles and services parts of three counties. The total student enrollment for this district is 36, 575. The average enrollment increase over the last four years is 1,173 students per year. Due to the quickly growing enrollment, this district is currently

embarking on an aggressive construction plan. This plan consists of building six new elementary buildings, one new middle school and one new high school. A warehouse/plant operations center will also be built. Renovations and expansions will be done on 49 schools within the district. The construction time line ranges over a four-year period (district web site).

Due to the current lack of space, most of the elementary art teachers teach off of a cart, moving among classrooms. Every year the few teachers who have an art room run the risk of having it converted into a regular classroom. Elementary art is taught for 45 minutes a week in grades one through six, and 30 minutes a week in kindergarten and some special education classes. The fine arts department has to readjust staff and school assignments yearly to accommodate enrollment increases. Many elementary art teachers have to travel between two schools a week.

The instructional expenditure per pupil is $4,374 district wide. Operating expenditure is $7,146 per pupil. The average teaching experience for this district is 14.8 years. The average teachers' salary is $58,932. Fifty-two percent of the teachers hold a bachelor's degree, while 47% have a master's degree and above. The average teaching experience is 14.3%. The pupil-teacher ratio for the district is 20.7:1 and the pupil-administrator ratio is 279.3:1. The average administrator salary is $76, 313 (1999 State School Report Card).

The community population for Sites A and B is 48,736. They are located in an area comprised mainly of single-family homes, apartment buildings, and small businesses. The average household income is $50,567 and the median home value is $94,228. Thirty-seven percent of household units are rented and 63% of household units are owned by the occupants.

The median age for the population is 29.5 years old. Of the residents who are 25 years of age or older, 18.9% of them have received a bachelor's degree (www.move.com).

The surrounding community for Site C contains single-family homes, town homes, as well as apartment buildings and condominium developments. There are several residential developments currently being built in this community. The median household income is $56,688 and the median home value is $122,692. The population is 15,824 (Area Association of Realtors).

National Context of the Problem

The students' ability to recall information is not only a problem in an art class that meets once a week, but in a regular classroom setting as well. Several possible factors that may contribute to this problem are lack of attention, lack of motivation, and the transferring of information from short-term to long-term memory. "Educators must ensure that students attend to learning, attach new learning to previous learning, actively engage in learning, construct meaning, and demonstrate their learning" (Banikowski & Mehring, 1999, p. 1).

Before students can recall information, they need to be focused on the source of the information being presented. Simply being present in class and looking at the teacher does not mean they will learn. L.W. Anderson (as cited by Banikowski & Mehring, 1999) states that studies indicate that even in the most engaging learning environment, students are active listeners only three-fourths of the time they are receiving classroom instruction. This figure indicates that holding students' complete attention is a growing challenge for teachers. As

educators know, ". . . the first step in learning and remembering important information is to pay attention" (Banikowski & Mehring, 1999, p. 6).

Once the attention is gained, "...teachers must make an overt effort to provide motivation and readiness that guarantee students are prepared for the thinking process" (Merenbloom, 1992, p. 156). To increase student success, lessons need to be meaningful and motivating. By creating lessons that spark the children's interest, teachers can increase the likelihood that students will be engaged. Although direct instruction has its place in the classroom, it should not be the primary model. "Only four to eight minutes of pure factual lecture can be tolerated before the brain seeks other stimuli.... Continuous presentation of facts or concepts in isolation or in a nonstop series of anecdotes will all have the same fatiguing effect–and the child will not learn as much, nor will she come to anticipate and enjoy learning" (Perry, 2000, p. 2).

It is the instructor who will determine, for the most part, the quality of the classroom experience (Cross, 1993 as sited by Kher, 1999). "Making the classroom a place that naturally motivates students to learn is much easier when students and teachers function in an atmosphere where academic success and the motivation to learn are expected and rewarded" (Renchler, 1992, p.1).

Attention and motivation are only the first steps in the learning process. In order for true learning to take place, the information needs to be transferred into memory. All memory involves three processes: receiving, storing and retrieving information. First, all information from the senses is received by the brain. This information, including thoughts and feelings, forms a memory. This is first held in what is known as sensory memory. Although the capacity of the sensory memory is unlimited, the information itself is held very briefly (Mayer, 1987). As

Henson and Eller state, "Duration is only one to four seconds. Visual information lasts less than one second, tactile information two to three seconds, and auditory information up to four seconds" (Banikowski & Mehring, 1999, p. 2).

If the information is meaningful enough, it may transfer into the short-term memory (STM). This is where the brain holds and processes new information. There are two notable characteristics of STM. First, it screens incoming information. Second, its capacity and duration are limited. About five to nine items can be held for about ten to twenty seconds for an adult without rehearsal (Gagne, Yekovich & Yekovich, 1993).

The information is next moved to long-term memory (LTM). LTM is capable of storing information for long periods of time and the capacity is unlimited. In order to store information in LTM, new information must be connected with prior knowledge. Ideally, any amount of information should be remembered for as long as wanted. However, the exact time duration of LTM has not yet been determined and perhaps never will be (Banikowski & Mehring, 1999).

If students cannot transfer the information from short term to long term memory, then retrieval is impossible. Therefore, by holding students' attention and giving meaningful presentations, teachers can help them transfer the information to LTM. "Teachers have to continually focus students' attention on important information to be learned and engage them in actively rehearsing that information until the students securely retain it in long-term memory" (Banikowski & Mehring, 1999, p. 13). Together, educators' and students' ultimate goal is to strive for a classroom environment where attention and motivation are factors that stimulate students' ability to learn and retain information.

CHAPTER 2

PROBLEM DOCUMENTATION

Problem Evidence

In order to document the problem of poor student memory retention, teacher surveys were given to all elementary art teachers within the district. Pre- and posttests of memory retention were given to establish a student memory baseline at the beginning of the research. During the first unit the teacher-researchers examined the students' pre-existing knowledge by administering a pretest on art concepts and techniques. The same pretest was given as a posttest one week later to see if students retained the information.

The teacher-researchers created and administered a two-part survey to all art teachers in the district during the first week in the school year at a monthly department meeting. (Appendix A) There were 33 elementary art teachers who completed the survey. The teachers were asked approximately how often their students were unable to recall concepts taught on a weekly basis. This survey also asked how often teachers needed to re-teach material due to this problem. Lastly, the survey asked the teachers to indicate their frustration level when students were unable to recall the information previously taught.

Part one of the survey consisted of two questions to which the teachers could select from three possible answers: Most of the time (60-100%), Some of the time (30-59%), or Rarely

(0-29%). The responses for the third question allowed four choices: no frustration, slight frustration, moderate frustration, or high frustration.

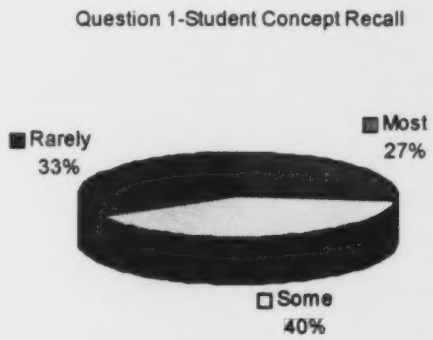

Figure 1A. Art teacher survey results regarding question 1–student concept recall.

In Figure 1A, the results for question 1 show 27% of the teachers stated that students were unable to recall concepts most of the time, 40% of the teachers report that students were unable to recall concepts some of the time, while 33% of the teachers say that students rarely were unable to recall concepts.

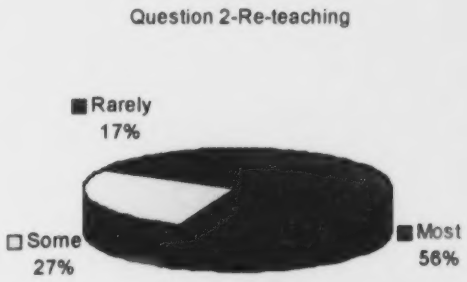

Figure 1B. Art teacher survey results for question 2 regarding re-teaching.

Figure 1B shows in question 2, 56% of teachers re-teach information most of the time, 27% of teacher re-teach information sometimes, and 17% rarely re-teach information.

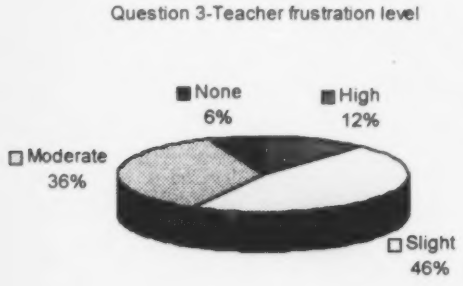

Figure 1C. Art teacher survey results for question 3 regarding teacher frustration level.

For question 3, Figure 1C shows 12% of the teachers indicate a high frustration level with this problem, 36% indicate a moderate frustration level, and 46% had a slight frustration level, and only 6% of the teachers report no frustration level.

Overall, teachers are reporting that two-thirds of the time students are unable to recall the concepts or procedures for the units taught. This results in 83% of the teachers having to re-teach information at least some, if not, most of the time. Ninety-four percent of the teachers expressed having some level of frustration with this problem.

Part two of the survey that was administered to the art teachers pertains to teaching methods. This survey asked teachers if direct instruction was the primary method of teaching stressed to them as undergraduates and to what other methods were they exposed. It also questioned how often direct instruction is used in their own teaching. Figures 2, 3, and 4 show the responses for each of the questions.

Figure 2. Percentage of teachers who were taught direct instruction as a primary teaching method during undergraduate coursework.

As shown in Figure 2, seventy-three percent of the teachers responded positively while twenty-seven percent said that direct instruction was not the primary teaching method stressed to them as an undergraduate.

Figure 3. Percentage of teaching methods learned during undergraduate studies, other than direct instruction.

As shown in Figure 3, 31% of the teachers responded that they had learned teaching methods other than direct instruction. Some responses included cooperative learning, student-guided learning, and various questioning strategies. The remaining 69% responded that they learned no methods other than direct instruction.

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For question three on part two of the survey, teachers were asked how often they feel they use direct instruction in their teaching. Teachers had to choose among the following answers: all of the time, most of the time, or rarely. Seventy-nine percent of the teachers use direct instruction most of the time, fifteen percent of the teachers use it all of time, and only six percent rarely use direct instruction, as shown in Figure 4.

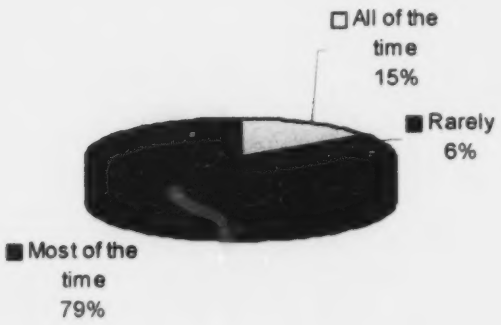

Figure 4. Percentage of time direct instruction is used in teaching.

As indicated by the graphs, nearly three quarters of the teachers indicated that direct instruction was the primary method of teaching stressed to them in their undergraduate coursework. Although 69.5% of the teachers are aware of other teaching methods, amazingly 94% still use direct instruction as their main teaching technique.

The teacher-researchers at Sites A, B, and C created and administered a memory pretest for each targeted third grade class . It was given on the first day of the first art unit, and a memory posttest was administered on the last day of that art unit to create a baseline. The pretest shows the prior knowledge about the artist or art element before the art unit was taught.

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The posttest shows how much information the third grade students retained at the end of the art unit. (Appendix A) Both the pretest and posttest asked between four and six questions based on a certain artist or art element. The students wrote the answers on a piece of paper which was then collected by the teacher-researchers and scored. Mastery level for the posttests ranged from 80-100%. Scores ranging from 60-79% were grouped in the partial mastery level. Any test score of 59% or lower was considered non-mastery level.

The figures 5A and 5B, show the scores from the students at Site A who studied an art unit on the artist Grant Wood. Figure 5A is the result of the memory pretest given the first day of the art lesson. It shows that 33% of the students had prior knowledge of exposure to GrantWood. Figure 5B shows the results of the memory posttest, given to the students on the last day of the Grant Wood art unit. The posttest asked about the artist, time period, country, and type of materials the artist and students used.

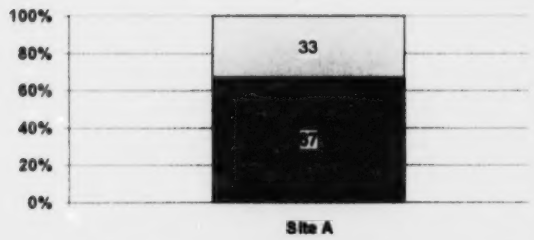

Figure 5A. Percentage of students at Site A who had prior knowledge of the artist Grant Wood.

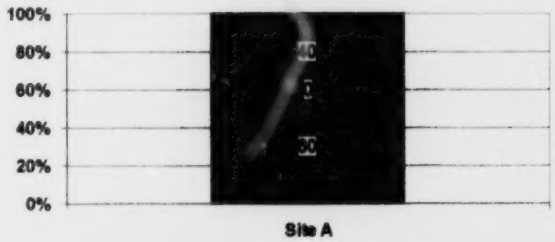

Figure 5B. Percentage of students at Site A who scored at mastery, partial mastery, and non-mastery levels.

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Figure 5A shows that on the first day of the unit of all the third grade students, only 33% had heard of the artist before. Figure 5B shows the results of the posttest given to the students after the teacher-researcher taught the Grant Wood unit. (Appendix A) At Site A 60% of the students mastered the content, 0% had partial mastery of the content, and 40% had not mastered the content.

Figures 6A and 6B show the scores from a third grade class at Site B which studied the art concept of line. Before the lesson, students were given a memory pretest to determine their previous knowledge of the subject of line. These results are represented in Figure 6A. At the end of the unit which was taught using direct instruction, students were given a memory posttest to assess how much of the information was mastered. (Appendix A) These results are represented in Figure 6B.

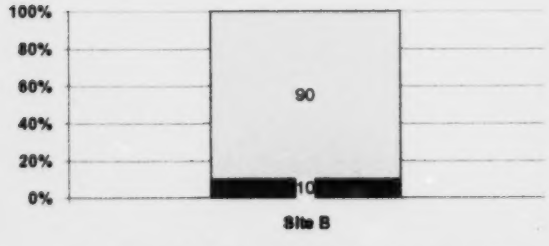

Figure 6A. Percentage of students at Site B who had prior knowledge of the art element of line.

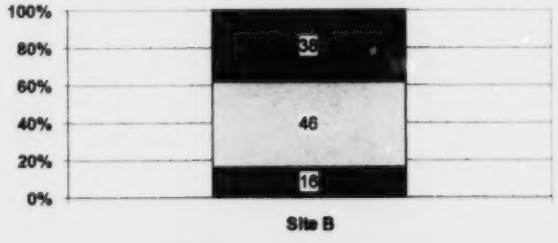

Figure 6B. Percentage of students at Site B who scored at mastery, partial mastery, and non-mastery levels.

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The class's scores on the pre- and posttest are shown in Figures 6A and 6B. As determined by the pretest, 90% of students had some previous knowledge of line. Despite previous knowledge, the posttest shows only 16% of the class displayed mastery of concepts covered during this unit on line. Forty-six percent displayed partial mastery, while 38% displayed non-mastery.

Figures 7A and 7B show the scores from the students at Site C who studied the art unit on the concept of line. Figure 7A shows the results of the memory pretest given to the students on the first day of the unit. This figure shows that 32% of the students had some knowledge regarding the element of line as it is used in artwork while 68% had no prior knowledge. Figure 7B shows the results of the memory posttest. (Appendix A)

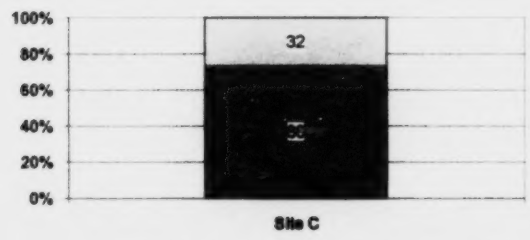

Figure 7A. Percentage of students at Site C who had prior knowledge of the art element of line.

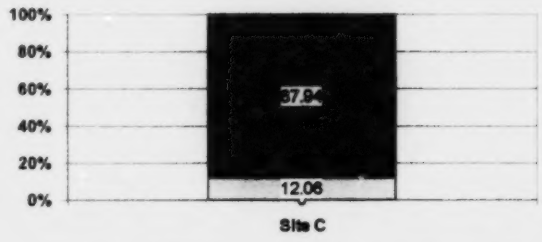

Figure 7B. Percentage of students at Site C who scored at mastery, partial mastery, and non-mastery levels.

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Figures 7A and 7B show the results of the pre and posttest for the art unit on the element of line. Although 32% of the students had prior knowledge of the subject matter, no students achieved mastery, only 12.06% had partial mastery, while 87.94% had little to no understanding of the subject.

In conclusion, the teacher-researchers had higher expectations of the students, given the amount of their prior knowledge. As illustrated by these graphs, memory retention is a concern. Prior knowledge does not always indicate students' ability to remember. At each site, the results of the students' posttest scores varied. At Site A, a small percentage of students had prior knowledge of the artist, however over half of the class had mastered the information at the end of the unit. At Site B, most students had a significant amount of prior knowledge and test scores reflected a comparable amount of retained information. At Site C, there was also a small amount of prior knowledge, however, even after instruction they were unable to retain unit concepts and scored poorly on the posttest.

Probable Causes

The literature cites two categories of probable causes that contribute to the lack of student memory retention: instructional causes and physical causes of students' environment. The instructional causes include a lack of diverse teaching styles and inadequate teaching methods which lead to insufficient student knowledge, motivation and attention. The physical causes of students' environment include stress in family life and diet.

Instructional Factors

Inadequate teaching methods and a lack of diversity among teaching styles contribute to an autocratic teaching environment. Science has established that this is incompatible with how the brain really works (Jensen 1998). According to Joyce, Weil, and Calhoun (2000), there are a wide variety of teaching methods which can be grouped into four families: social, information-processing, personal, and behavioral.

The social family emphasizes developing a community of learners. Some of the methods include group investigation, role playing, and multiple intelligences. The second family, information-processing, encourages students to make a conscious effort to think more effectively. Examples of methods in this family would be scientific inquiry, memorization and metacognition. Encouraging students to be self-directed is the goal of the personal family of models. This includes non-directive teaching, in which students make decisions about their own instruction. Lastly, the behavioral family contains some of the most commonly used models, including direct instruction. This family emphasizes learning productive patterns of behavior which help students to achieve in an instructional setting.

The majority of the teaching population has been trained in direct instruction which places a heavy emphasis on a teacher controlled environment. Students are expected to remember information after it has been dictated to them. In essence students become court reporters, taking in information word for word, rather than being participants in active learning. Students need to be participants in order to internalize information and make it meaningful in their own lives.

The environment a teacher creates greatly influences students' motivation and attention in the classroom. If teachers are content to pay minimal attention to the effect that the surrounding classroom environment has on a student, then it is not unrealistic to find the students giving minimal attention to the subject matter.

> One of the major keys to motivation is the active involvement of students in their own learning.... It is better to get students involved in activities, group problem solving exercises, helping to decide what to do and the best way to do it, helping the teacher, working with each other, or in some other way getting physically involved in the lesson" (Harris 1991, p.1).

In successful learning, motivation is key. Students who are motivated, active participants, begin to take ownership of their learning. This allows them to make lasting, internal connections to the content of the subject matter. If students are motivated, then they will be attentive and better learners.

Physical Factors

There are several factors that educators have no control over, yet greatly impact students' ability and learning in the classroom environment.

> Educators continually complain that students are not ready to learn. They show up for school underfed or malnourished, angry or apathetic, stressed, threatened, and sleepy....Naturally, this makes the roles of both teacher and learner much more difficult. (Jensen, 1998, p.17)

The home life of students today can be very stressful. They have to deal with issues such

as divorce, parents working more than one job, lack of parental support, isolation, and over-involvement in outside school activities. Sometimes children are even shuffled between two homes during the week. Bracy, as cited by Kentz and Orman (1998, p. 11), states "...parents seem willing to help their children, however, because of their personal workload, they lack the energy for actual participation. Other parents feel school should educate their children. Parents would rather devote their time to having fun, than doing school work with their children."

Television is another factor that contributes to the isolation of students today. Hopp, Horn, McGraw, and Meyer (2000) stated that media does not only give children poor examples of conflict resolution, but students who watch over four hours of television a day also "...lose opportunities to practice social interaction and communication skills" (Kubey, Czikszentmihalyi, 1990, p.12). Extensive television watching increases aggression, shortens attention span and diminishes cognitive abilities (Childhood Education, 1993).

Another aspect of physical factors that affect learning is students' nutritional habits. In today's fast-paced society, parents are more concerned with getting dinner on the table, rather than providing a nutritious, well-balanced diet for their child. Current research looks at connections between nutrition and neuroscience and realizes that students' eating habits have become a serious school issue (Given, 1998). More and more teachers are including a health or fruit break in their daily teaching schedules in order to help students to get the necessary nutrients that their brains need for effective learning.

In conclusion, results of the teacher surveys and student posttests show that memory retention is a problem in the art classroom. Students are not retaining and recalling enough important information from week to week. Much time is wasted re-teaching the same subjects

instead of moving on to new and deeper understanding of art. This leads to frustration for teachers and low levels of concept mastery for students.

Probable causes for this problem can be divided into two categories: physical factors and instructional factors. Teacher surveys and a review of the literature show that despite having knowledge of alternative instructional methods, most teachers continue to rely on passive direct instruction techniques which fail to motivate many students. Information never becomes meaningful and consequently is not remembered. Research shows that physical factors such as students' diet, sleep habits, and home life have a great impact on children's ability to learn and remember. When students come to school hungry, tired, or stressed, traditional teaching methods are even more likely to fail.

CHAPTER 3

THE SOLUTION STRATEGY

Literature Review

While the research shows that physical factors, such as poor diet and a stressful homelife, can have a negative impact on student memory retention, these are factors over which educators have limited control. Consequently, the teacher-researchers have chosen to focus on the solutions to the instructional factors that contribute to memory retention. These are more readily addressed in the classroom by changing the way information is presented and how students are motivated. The lack of student memory retention can be attributed to two main factors: instructional and motivational.

Instructional - Music

Within the instructional category, incorporating music is one method a teacher can use to increase student memory retention. With music, educators can reach out to connect to each individual student's way of learning. Howard Gardner's multiple intelligences help educators embrace the idea that all students are able to learn. Musical intelligence is one of Gardner's nine multiple intelligences. Since children are naturally interested in music, they bring music into their games and learning. It is musical activities that give children important experiences that assist them in memory (www.pionet.net). Music and songs are believed to benefit children by

improving intellectual and motor skills as well as social abilities (Music and Cognitive Achievement in Children, 1994).

Instructional - Mnemonics

Another method teachers might use in their classrooms is mnemonics. Mnemonics are techniques used to form associations to better remember things. The origin of the word comes from the Greek "mneme," which means "to remember." The use of mnemonics as an instructional technique can help students organize and remember information for faster and more efficient recall later.

Mnemonics are part of a brain-based approach, which addresses active learning, engaging the student in an active environment. Due to the increase of brain research, science is providing a better understanding of how people learn. Teachers are now able to adapt their instructional methods to accommodate the brain's ability to process information. "Challenge and interactivity are essential. Passive observation is not enough ' Tell me and I forget. Show me and I remember. Let me do and I understand,' says the ancient Chinese proverb" (Abbott, 1997, p. 8).

The key to good memory is organizing information and both music and mnemonics are tools to help students accomplish this task. Organizing information into poems, stories, or songs makes it more meaningful to students which in turn helps them to store and retrieve this information. Several researchers support the idea that making material meaningful and relating it to prior knowledge is crucial to students' abilities to understand and recall information (Rafoth, 1993; Weiss, 2000; Pool, 1997).

Instructional - Motivation

A third instructional method available to teachers is the use of rewards to increase student motivation. Instructors use motivation to keep students interested in the subject matter and on task. "You know that you retain easily what interests you, whereas you struggle with what does not. This is proof enough that there is a relation between memory, motivation, and attention" (Lapp, 1992, p. 49).

The two different kinds of motivation used in the school setting are intrinsic and extrinsic. "Intrinsic motivation occurs when the product of one's endeavor is the prize" (Cropper, 1998, p. 2). An example of intrinsic motivation would be pride in one's art project. Intrinsic motivation is something that needs to be nurtured in students over time. This can present a real challenge for the art instructor who only has contact with students briefly once a week.

"Extrinsic motivation occurs when the product of one's endeavor produces the prize" (Cropper, 1998, p. 2). For example, stickers, stamps and certificates can be used for this purpose. If the students remember more information due to the extrinsic reward, they will perform better in other aspects of art as well. "What prompts a person to do something is a system of reinforcements or rewards, since anything one undertakes requires effort" (Lapp, 1987, p. 20). This will lead students to develop their own intrinsic motivation.

A student's emotions play an integral role in motivation. Emotions have been proven to intensify the learning experience, thus making it a more permanent and lasting experience. Harris (1991, p. 2) states:

Strong and lasting memory is connected with the emotional state and experience of the learner. That is, people remember better when the learning is accompanied by strong emotions. If you can make something fun, exciting, happy, loving, or perhaps even a bit frightening, students will learn more readily and the learning will last much longer. Emotions can be created by classroom attitudes, by doing something unexpected or outrageous, by praise, and by many other means.

Grasping students' attention is one of the most important things teachers need to do when presenting a lesson. Teachers cannot automatically assume that the students are paying attention to them. They have many stimuli that can distract them from a lesson. Students are always paying attention to something, whether or not it has instructional value (Wolfe, 1998, p. 68). Instructional methods can divert students' attention away from other stimuli and keep them actively involved in the lesson. This allows them to concentrate and ultimately organize the information (Lapp, 1987).

According to the literature reviewed, multiple instructional motivational factors contribute to the lack of student memory retention. Incorporating music and mnemonics into instruction can actively engage students in the learning process. If they are able to make information meaningful, they will have a better chance of retaining it. The use of rewards as motivational factors can also be beneficial in the classroom. There are several types of reward programs that a teacher can create to capture the students' attention that will lead to better memory.

Project Objectives and Processes

During the months of September 2001 through December 2001, the teacher-researcher at Site A will be using music as an intervention to increase student memory retention (Appendix B). At Site B the teacher-researcher will be incorporating mnemonics into the unit instruction (Appendix B). Lastly, teacher-researcher at Site C will be using stickers as a means to motivate students thus increasing memory retention. As a result, the targeted third grade art classes will increase memory retention by five percent, as measured by weekly reviews, a memory pre- and posttest and a culminating assessment for the semester (Appendix B).

In order to accomplish the project objective, the following processes are necessary:

1. Researcher at Site A will develop musical songs for units of instruction which incorporate the unit concepts. (Appendix C)

2. Researcher at Site B will develop mnemonic devices for units of instruction and assist students in their participation to create their own mnemonic devices which incorporate the unit concepts. (Appendix C)

3. Researcher at Site C will purchase stickers to be given as rewards to students who are able to retain and recall relevant information from the units studied during the projected time frame.

Table 1. Project Action Plan

PROJECT OBJECTIVE	INTERVENTION	TARGETED GROUP BEHAVIOR	TEACHER/ RESEARCHER BEHAVIOR	MATERIALS	TIME: FREQUENCY AND DURATION
To increase students' memory retention in art class	Develop learning activities that incorporate mnemonic devices to encourage memory retention	NONE	Researchers review and collect materials for developing mnemonic devices	Journals, textbooks, magazine articles and district art curriculum	August 2001, during two day planning meeting
To increase students' memory retention in art class	Develop learning activities that incorporate music to encourage memory retention	NONE	Researchers review and collect materials for developing musical exercises	Journals, textbooks, magazine articles, district art curriculum	August 2001, during two day planning meeting
To increase students' memory retention in art class	Develop reward system to encourage memory retention	NONE	Researchers review and collect materials for developing reward system	Journals, textbooks, magazine articles, district art curriculum	August 2001, during two day planning meeting
To increase students' memory retention in art class	Develop reward system to encourage memory retention	NONE	Researchers review and collect materials for developing reward system	Purchase materials to be used for rewards	August 2001, during two day planning meeting

To increase students' memory retention in art class	Administer elementary art teachers pre-survey	Elementary art teachers in district	Administer elementary art teachers pre-survey	Elementary art teachers pre-survey	Week: 1 Five minutes of one hour monthly staff meeting
To increase students' memory retention in art class	Administer pre-test on art principles/ elements of art (Unit 1)	3rd grade students take different pre-tests at Sites A, B, and C	Researchers administer pre-test orally and interpret responses	Pre-test questions pertaining to Unit 1	Week: 1 Five minutes of a 45 minute art class
To increase students' memory retention in art class	Teach Unit 1 on Grant Wood at Site A	3rd grade students use concepts taught to produce artwork	Researcher I teaches Unit 1 on Grant Wood	Researcher I Unit 1 on Grant Wood	Week: 1 35 minutes of a 45 minute art class
To increase students' memory retention in art class	Teach Unit 1 on the art element of Line at Sites B & C	3rd grade students use line concepts to produce artwork	Researchers II & III teaches Unit 1 on Line	Researchers II & III Unit 1 on Line	Week: 1 35 minutes of a 45 minute art class
To increase students' memory retention in art class	Administer Unit 1 post-test	3rd grade students take post-test at Sites A, B, & C	Orally administered Unit 1 post-test	Post-test questions and markers for writing	Week: 2 10 minutes of a 45 minute art class

To increase students' memory retention in art class	Teach Unit 2 using music to learn important art concepts	3rd grade students learn and create project on Aboriginal art at Site A	Researcher I teaches Unit 2 using music and evaluates student projects with rubric and conducts weekly review	Unit 2 on Aboriginal art and teacher-created song	Weeks: 3, 4, & 5 during 45 minute class periods once a week
To increase students' memory retention in art class	Teach Unit 2 using mnemonics	3rd grade students learn and create project on Georgia O'Keeffe at Site B	Researcher II teaches Unit 2 using mnemonic device containing unit information and evaluates student projects with rubric and conducts weekly review	Unit 2 on Georgia O'Keeffe and corresponding teacher-created mnemonic device	Weeks: 3, 4, & 5 during 45 minute class periods once a week
To increase students' memory retention in art class	Teach Unit 2 using stickers as rewards	3rd grade students learn and create project on Mexican art at Site C	Researcher III teaches Unit 2 using stickers as rewards and evaluates student projects with rubric and conducts weekly review	Unit 2 on Mexican art and reward stickers	Weeks: 3, 4, & 5 during 45 minute class periods once a week

To increase students' memory retention in art class	Teach Unit 3 using music to learn important art concepts	3rd grade students learn and create project on Architecture at Site A	Researcher I teaches Unit 3 with music and evaluates student project with rubric and conducts weekly review	Unit 3 on Architecture and teacher-created song	Weeks: 6, 7, & 8 during 45 minute class periods once a week
To increase students' memory retention in art class	Teach Unit 3 using mnemonic devices	3rd grade students learn and create project on Henri Matisse at Site B	Researcher II teaches Unit 3 with mnemonic device and evaluates student project with rubric and conducts weekly review	Unit 3 on Henri Matisse and teacher-created mnemonic device	Weeks: 6, 7, & 8 during 45 minute class periods once a week
To increase students' memory retention in art class	Teach Unit 3 using stickers as rewards	3rd grade students learn about and create Native American shields at Site C	Researcher III teaches Unit 3 using stickers as rewards and evaluates student project with rubric and conducts weekly review	Unit 3 on Native American art and reward stickers	Weeks: 6, 7, & 8 during 45 minute class periods once a week

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To increase students' memory retention in art class	Teach Unit 4 using music to learn important art concepts	3rd grade students learn and create project on Japanese kimonos at Site A	Researcher I teaches Unit 4 using song and evaluates student projects with rubric and conducts weekly review	Unit 4 on Kimonos and teacher-created mnemonics songs	Weeks: 9,10 & 11 during 45 minute class periods once a week
To increase students' memory retention in art class	Teach Unit 4 using mnemonic devices	3rd grade students learn and create project on Native American art at Site B	Researcher II teaches Unit 4 using mnemonic devices containing unit information and evaluates student projects with rubric and conducts weekly review	Unit 4 on Native American art and teacher-created mnemonic devices	Weeks: 9,10 & 11 during 45 minute class periods once a week
To increase students' memory retention in art class	Teach Unit 4 using stickers as rewards	3rd grade students learn and create project on Turkish tugras at Site C	Researcher III teaches Unit 4 using stickers as rewards and evaluates student project with rubric and conducts weekly review	Unit 4 on Turkish Tugras and reward stickers	Weeks: 9,10 & 11 during 45 minute class periods once a week

To increase students' memory retention in art class	Administer elementary art teacher post-survey	Elementary art teachers in district	Administer teacher survey	Elementary art teachers post-survey	Week: 15 Five minutes of one hour staff meeting in December
To increase students' memory retention in art class	Administer Semester review	3rd grade art students complete final assessment at Sites A, B, & C	Researchers I, II, and III, create and administer semester review questions, and evaluate final assessment	Assessment sheet with questions for students	Week: 15 45 minute art class
To increase students' memory retention in art class	Analyze completed assessment tools and prepare results	NONE	Researchers I, II, and III, compile/analyze data from assessment tools	Completed rubrics, weekly review data, teacher surveys and pre & post-tests	Week: 16 December 2001 during 3 day researchers planning meeting

Methods of Assessment

The teacher-researchers will use a total of three instruments for assessment. They are: memory unit posttests, rubrics, and a semester review. Students will be taught three art units employing the different interventions. At the end of each unit a memory posttest will be given to determine the level of memory retention in regards to information presented in the first class period. Rubrics will be used for assessing the production of artwork created in each unit by all

teacher-researchers. (Appendix B) This is to determine if students have understood the procedures and can apply the appropriate steps to their artwork.

As a final assessment, students will complete a semester review. Art visuals and tools which were studied during the research period will be displayed around the room. Students will be asked to identify each artist or culture and material(s) used for several of the units that were studied.

As each lesson progresses, a weekly oral review will be given during each continuing class period for the lesson. In this manner, the teacher can quickly assess the students' memory retention. This will help the teacher-researcher determine how much of the material presented needs to be re-taught before the lesson can continue. Teacher-researchers will document facts and observations in a journal each week. They will also document the results and progress of the students through rubrics, and weekly reviews.

Thus, in order to determine the effectiveness of rewards, mnemonics, and music, on student memory, researchers will use rubrics and keep journals of weekly results. The culminating event for the action research project will be a semester review.

CHAPTER 4

PROJECT RESULTS

Historical Description of the Intervention

The object of this project was to increase students' memory retention in a weekly art class. The implementation of songs to introduce lesson context, the use of mnemonic devices and using stickers as rewards were chosen as interventions to address the desired outcome. The intervention began in September and concluded in December 2001.

In September 2001, during the first art class, students in all groups were given a pretest on the art concepts that would be taught to establish students' pre-existing knowledge. The first unit of study was then introduced and taught using conventional teaching methods. Students were given an oral review in the subsequent class and a final assessment was given in the last class of that unit to determine the amount of individual student memory retention. This established a memory retention baseline for the project.

During each of the following units, the teacher-researchers introduced the art units of study using their chosen interventions. (Appendix C) Oral weekly reviews were still given as units continued from week to week. All teacher-researchers gave an end of unit test on the information covered to determine students' memory retention of facts and concepts. (Appendix B)

All three of the teacher-researchers observed through the rubrics that the students' artwork exhibited more details of unit concepts. This shows the transfer and application of key background information that was presented at the start of the units. Students seemed to have better memory recall and were able to apply knowledge more readily to the finished product.

At Site A, the teacher-researcher handed each student a song about the unit covered on the first day. They sang the song twice, then were taught their art unit. On the next day of the art unit, the teacher distributed the songs and sang with the students. Songs were collected and the students continued their lesson. On the final day of the unit, the teacher-researcher gave them a blank piece of paper and asked between four and six questions orally and the students wrote their answers. The answers were collected, then the students reviewed what the answers were and sang the song to look for the answers. The art unit was then finished on that day. For the semester review, four tables in the art room had materials from one of the four units studied that semester. The students were handed a test sheet with questions for each table. The students were given approximately seven minutes at each table to answer the corresponding questions and then they rotated in order until all questions were completed.

The teacher-researcher at Site A referred to the weekly teacher journal and saw that the students were overall great participators while using music to learn their art unit concepts. During all three units, they were excited to practice singing and were enthusiastic when verbally asked questions that pertained to the songs and concepts and tested their memory. The students, not used to taking tests in art class, were hesitant to take the first art posttest after the Grant Wood unit. However, as the next unit followed the same format, they were more comfortable. They quickly understood the connection between the songs and the questions being asked.

Each unit posttest showed an increase in scores as the units progressed. At first the students appeared surprised that songs were going to be taught in art class. During the Aboriginal unit, the teacher-researcher created the song to an original tune. The students learned the tune and words as best they could. When the architecture song was created next, the tune was the same as Frere Jacques. Singing and learning this song came much easier for the students because of the familiar tune. For the kimono unit, the teacher-researcher chose another tune that students would easily recognize; London Bridge is Falling Down. Again, the students enjoyed learning the words of a song they knew.

At Site B, the teacher-researcher incorporated mnemonics into instruction. During each unit students were given a verbal or visual mnemonic that emphasized key concepts. These mnemonics were used at the beginning and end of each class to review and help students remember. At the end of each unit, students were given a posttest to assess how well they retained the information. Students' artwork also was assessed using a rubric to monitor progress. After all three units were completed, a final semester review was administered to see if students were able to retain concepts over time.

The teacher-researcher at Site B noticed students responding very positively to the intervention. As noted in the weekly journal, test scores started improving with the first unit taught using mnemonics. Also evident was the enthusiasm students showed as they progressed through each unit. Learning the poems and silly sayings was much more fun and effective than the more traditional direct instruction method they had previously experienced. Art concepts learned using mnemonics were better understood and remembered, thereby becoming a part of students' vocabulary. Two students showed their enthusiasm by bringing books and articles

about new artists to share with the class. This extra effort was not usually evident in classes taught without the intervention.

While test scores did improve overall with each unit, the number of students who achieved mastery dropped slightly on the last unit posttest. The teacher-researcher attributed this to the fact that a visual mnemonics was used for this unit. This was different from the previous verbal memory cues learned, and consequently, unfamiliar. However, student participation remained high because they were involved in creating the visual memory cue.

At Site C, the teacher-researcher used stickers as incentives and rewards for students during weekly reviews and the end of the unit tests. During weekly reviews, students who provided correct answers to oral review questions were given a sticker as a reward. Students also had individual art folders in which they kept all end of unit tests. Students earned one sticker for each correct answer on the unit test . These stickers were displayed on the front cover of the folder. A final semester review was given after the completion of all three units to determine if students retained information.

At Site C, the teacher-researcher noted in the teacher's journal that the students were very apprehensive at the start of the intervention. Taking tests on unit content was not something they were used to doing. During the first unit, students seemed to respond well to the weekly, oral reviews at the start of each class. Students were excited and eager to answer questions to earn their stickers.

After the first set of tests were passed back to students and they were able to see how many stickers they earned for correct answers, they began to look forward to the end of the unit tests and took pride in their accomplishments. After passing back each of the tests, the teacher-

researcher and students would go over the correct answers. Students were then able to mentally review the information they had missed. Even when students did not scores as high as they had wanted, they were not discouraged or disappointed, but seemed even more determined to do better or earn more stickers during the next unit.

Teacher-researchers at all three sites began to see improvement in students' scores early in the intervention. Almost 80% of the students in all three sites were achieving at least partial mastery level or better by the second unit taught with the intervention. Each of the three techniques were having a positive effect for the students. By the end of the third unit, the results of the posttests from Sites A, B, and C showed an even higher percentage of students mastered concepts presented.

Presentation and Analysis of Results

Each teacher-researcher at Sites A, B, and C created and administered a memory posttest based on concepts from the second unit taught. The teacher-researcher at Site A presented the unit of Aboriginal art, incorporating music to increase memory retention. At Site B, the students studied the artist Georgia O'Keeffe and verbal mnemonics were incorporated to teach the unit. The teacher-researcher at Site C taught a unit on the Mexican holiday, Dios Los Muertos, and stickers were given as rewards for correct answers during reviews. The posttest questions were used to evaluate students' ability to remember unit concepts. The posttest consisted of five to seven questions, and was given orally. Students wrote answers on a piece of paper which was then collected and scored. Figure 8 shows the results from the first posttest given using the applied instructional techniques and rewards.

Figure 8 shows the results for the posttests from each of the three sites. At Site A where music was used, 70% of the students reached mastery level, 15% were at partial mastery, and 15% had no mastery of the unit. At Site B, the percentage of students who mastered the unit using verbal mnemonics was 71%, while 8% had partial mastery, and 21% had no mastery. Of the students at Site C, who were given stickers, 62% mastered the unit, 20% had partial mastery of the unit and 16% did not master the unit.

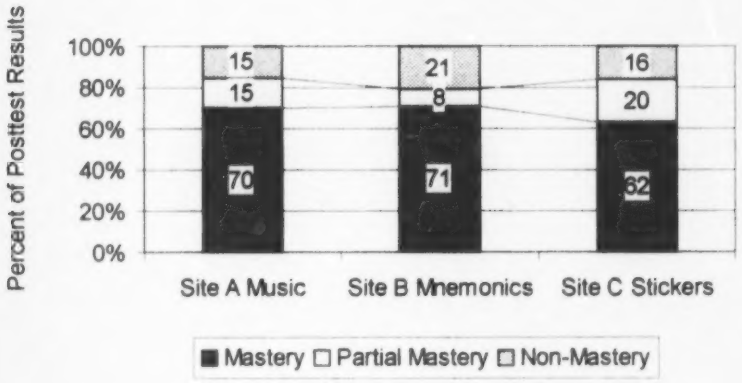

Figure 8. Percentage of students at Sites A, B, and C who scored at mastery, partial mastery, and non-mastery levels on the second art unit taught using music, mnemonics, or stickers.

After each of the teacher-researchers finished presenting unit three, they created and administered a memory posttest based on concepts from the unit taught. The teacher-researcher at Site A presented a unit on architecture, incorporating music to increase memory retention. At Site B, the students studied the artist Henri Matisse. Verbal mnemonics were used to help present the unit concepts to the students. The teacher-researcher at Site C taught a unit on Native American shields. Stickers were used as rewards for correct responses during oral

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reviews each week. To evaluate the students' abilities to remember unit concepts, a posttest was used. The posttest consisted of five to seven questions, given orally. Students wrote answers on a piece of paper which was collected and scored. Figure 9 shows the results from the unit 3 posttest. This is the second unit taught using the applied instructional techniques and rewards.

Figure 9 shows the results from the third art unit which was taught by the teacher-researchers using music, mnemonics and stickers. Figure 9 shows the results for the posttests from each of the three sites. At Site A where music was used, 85% of the students reached mastery level, 0% were at partial mastery, and 15% had no mastery of the unit. At Site B, the percentage of students who mastered the unit using verbal mnemonics was 75%, while 14% had partial mastery, and 11% had no mastery. At Site C, where students were given stickers, scores showed that 66% mastered the unit, 29% had partial mastery of the unit and 5% did not master the unit.

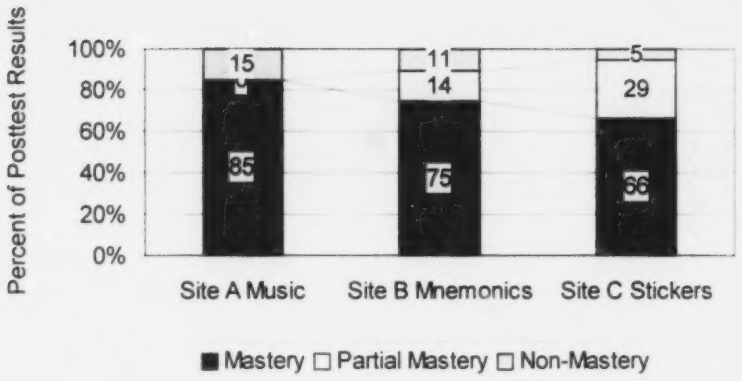

Figure 9. Percentage of students at Sites A, B, and C who scored at mastery, partial mastery, and non-mastery levels on the second art unit taught using music, mnemonics, or stickers.

As shown in Figure 9, the results of the posttest from Sites A, B and C had a high percentage of students that mastered the concepts presented in unit 3. The percentage of students scoring at the non-mastery level were comparatively low, ranging from 15% at Site A to only 5% at Site C.

Finally, the teacher-researchers at Sites A, B, and C created and administered a memory posttest based on the concepts from the fourth unit taught. This is the third unit in which the interventions were used. At Site A, the teacher-researcher presented a unit on Japanese kimonos, incorporating music to increase memory retention. At Site B, the students studied Native American amulets and incorporated verbal mnemonics to help remember key concepts. The teacher-researcher at Site C taught a unit on Turkish tugras, and gave stickers as rewards for correct answers during weekly reviews. After the unit projects were completed, the posttest questions were given to evaluate students' ability to remember unit concepts. The posttest, consisting of five to seven questions, was given orally. Students wrote answers on a piece of paper which was collected and scored.

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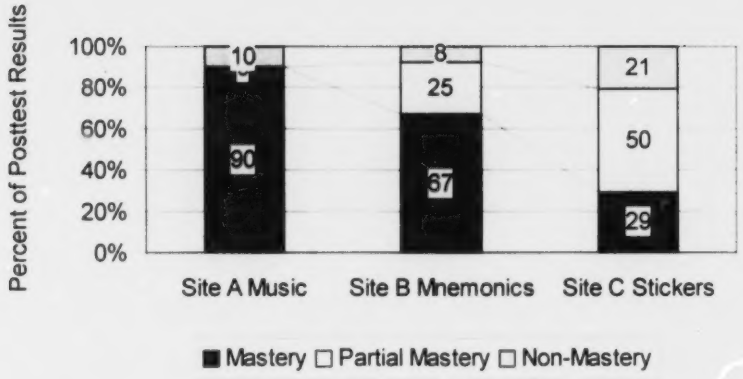

Figure 10. Percentage of students at Sites A, B, and C who scored at mastery, partial mastery, and non-mastery levels on the third art unit taught using music, mnemonics, or stickers.

Figure 10 shows the results of the fourth set of memory posttests from each of the three sites. At Site A where music was used, 90% of the students reached mastery level, 0% were at partial mastery, and 10% had no mastery of the unit. At Site B, the percentage of students who mastered the unit using visual mnemonics were 69%, while 25% had partial mastery, and 8% had no mastery. Students at Site C, where stickers were used, showed that 29% mastered the unit, 50% had partial mastery of the unit and 21% did not master the unit.

Overall, prior to intervention, the non-mastery level ranged from 38 to 87.9%. At the start of intervention, non-mastery declined to 15 to 21%. For the first lesson, the lowest mastery level was starting at 62% and increased by 4-15 percentage points in the subsequent lesson. For the final lesson using intervention, only Site A showed a steady increase in mastery level while Sites B and C slightly declined. However, partial mastery at Sites B and C increased, showing evidence that students were retaining information.

Each teacher-researcher at Sites A, B, and C created and administered a semester review to the targeted third grade students. (Appendix C) Each semester review asked 10 to 20

questions from the four art units that were taught. The first unit was taught without interventions, and the following three units used the instructional techniques of music, mnemonics or stickers as rewards. The results of the students' scores are in Figure 11.

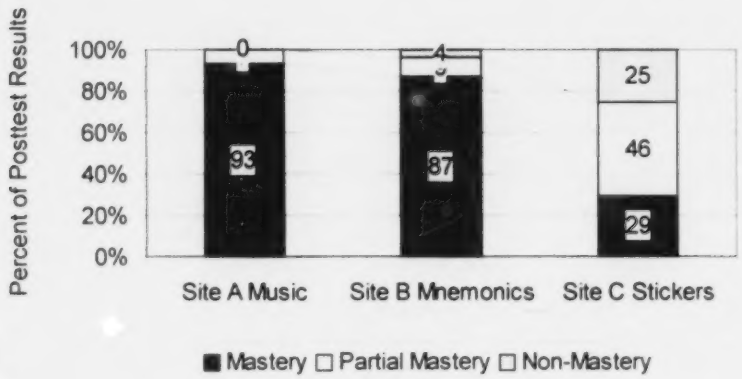

Figure 11. Percentage of students at Sites A, B, and C who scored at mastery, partial mastery, and non-mastery levels on the semester review.

Ninety-three percent of the students at Site A who were taught songs to remember information from the art units, scored at mastery level, 7% scored at partial mastery level, and no students scored at the non-mastery level. The teacher-researcher at Site B who used mnemonics for the art units, had 87% of the students at mastery level on the semester review, 9% at partial mastery, and 4% at non-mastery level. At Site C, where the students were given stickers as rewards to increase memory retention, the scores ranged from 29% mastery, to 46% partial mastery, and 25% at the non-mastery level.

Once the semester reviews were given to the students, the intervention period was completed. Then the teacher-researchers re-administered the student memory recall portion of the

elementary art teacher survey. Teacher-researchers wanted to see if art teachers throughout the district who had not used an intervention still exhibited frustration and experienced problems with student memory recall.

The teacher-researchers administered a posttest survey to 26 art teachers in the district during the last week of the action research during a monthly department meeting. The survey asked teachers how often the students are unable to recall art concepts. It also asked how often they had to re-teach the unit concepts due to lack of student memory recall. Teachers were also asked to indicate their frustration level with this problem. Figures 12, 13, and 14 show the results of the three questions asked in the post-survey.

Figure 12. Art teacher post survey results regarding question 1- student concept recall.

In Figure 12, the results for the first question on the survey show 15% of the teachers stated that their students are able to recall concepts or procedures for the unit most of the time, while 74% of students are unable to only recall concepts some of the time, and 11% are rarely unable to recall concepts.

Figure 13. Art teacher post survey results regarding re-teaching of unit concepts.

Figure 13 shows that 23% of the art teachers are often re-teaching the students important concepts or procedures due to a lack of student memory recall. Sixty-two percent of teachers said they sometimes have to re-teach concepts or procedures, and only 15% of the art teachers rarely re-teach the concepts or procedures because of a lack of student memory recall.

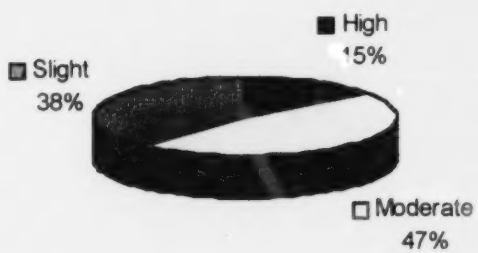

Figure 14. Art teacher post survey results for question 2- indication of frustration level.

In Figure 14, the last question on the survey asked the art teachers about their frustration level with the problem of student memory recall. The results show 15% of the teachers have a high frustration level, while 46% have a moderate frustration level, 38% are slightly frustrated and 0% have no frustration level with student memory recall.

Overall, memory recall continues to be a problem throughout the district. Eighty-nine percent of art teachers are reporting an inability of students to recall the concepts or procedures taught some or most of the time. Eighty-five percent of teachers are re-teaching the concepts taught from week to week to their students who cannot recall, and one-hundred percent of the teachers have expressed being at least slightly frustrated by this problem.

The final set of graphs shows the effects of the chosen interventions on student test scores. Each figure compares the levels of mastery, partial mastery and non-mastery of unit concepts before and after the interventions took place. The teacher-researchers compared the original results of the memory pretests taken at the beginning of the school year to the semester review which was done after all the interventions were used. Figures 15-17 show the comparison between the pretest scores from the beginning of the year before interventions were used, and the semester review scores taken after the interventions were employed.

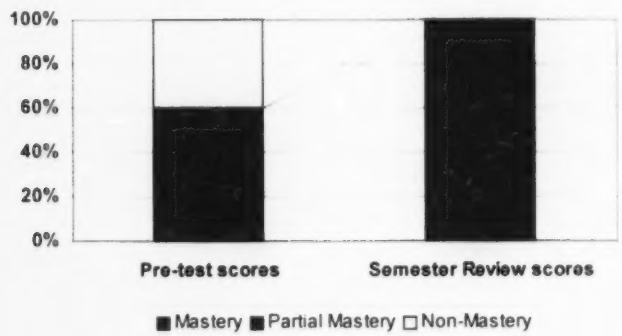

Figure 15. Site A-comparison of Pretest and Semester Review after using music.

At Site A where music was taught, only 60% of the students were at mastery level for the pre-test, while 40% were at the non-mastery level because of their poor memory recall, and no students reached partial mastery level. After music was taught as an instructional technique during the semester, the students then took a semester review which covered concepts they had learned in their art units. The semester review scores show that 0% of students were in the non-mastery level, 7% of the students reached partial mastery, and 93% of the students were in the mastery level. This shows there was a 66% increase in student memory retention from the pretest to the semester review.

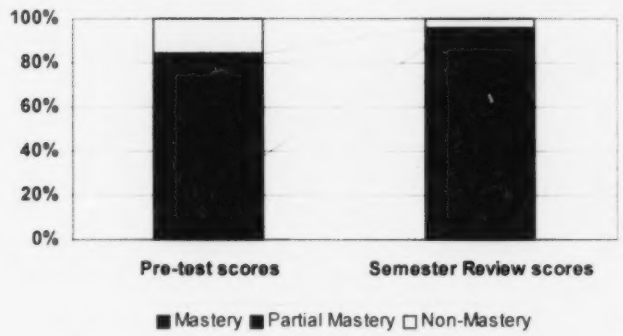

Figure 16. Site B-comparison of Pretest and Semester Review scores after using mnemonics.

In Figure 16, the results of the Site B using mnemonics, scores show that the mastery level rose from a pretest score of 38% to 87% in the semester review. By using mnemonics the number of students in the non-mastery level decreased from 16% originally to only 4% by the end of the semester. The partial mastery level also decreased from 46% down to 9%. Overall, the students' scores increased by 14% from the beginning of the semester.

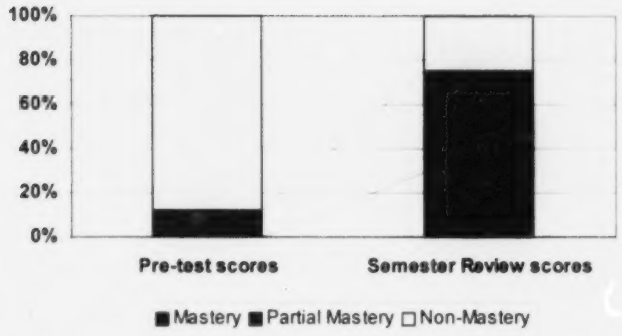

Figure 17. Site C-comparison of Pretest and Semester Review scores after using stickers as rewards.

There was also a positive effect on students' memory at Site C where stickers were used as rewards. As shown in Figure 17, the pretest scores in non-mastery decreased from 88% to only 25% by the semester review. In the partial mastery level there was a rise from 12% of students to 46% of the students. Lastly, where the mastery level was 0% originally at the pretest, there was now an increase to 29% in mastery. Site C had the highest improvement from the pretest to the semester review with 525%.

Among sites A, B and C, there was clearly an improvement in the scores after the interventions. As the scores of the semester review indicate,100% of the students at Site A had reached the partial mastery level or higher, 96% had reached partial mastery or higher at Site B, and Site C shows that 75% of the students were at partial mastery or above.

As stated earlier, the goal of the teacher-researchers was to increase the targeted third grade classes' memory retention by five percent. As the above data shows, student memory retention increased far more than five percent.

Conclusions and Recommendations

Overall, each of the three interventions had a positive impact on student learning. Students who learned songs at Site A remembered the most information from the art units taught. The second most successful intervention was at Site B where students were taught mnemonics. Although Site C did not show dramatic growth during the intervention, it yielded the greatest overall percentage of improvement.

The teacher-researchers would recommend allowing more time in the music intervention order to give students the opportunity to make up their own original songs to a past unit. With the information they learned, having time to share and present would have been an exciting challenge. Creating , teaching, and presenting new songs for each unit can be time consuming for the teacher-researcher.

The teacher-researchers concluded that one drawback to the instructional approach of mnemonics was that it required extra creativity and preparation time. All mnemonics used during the first two units were teacher-created, since no prepared art mnemonics could be found. However, as students became more familiar with the process, they were able to assist in creating the mnemonics. The teacher-researchers predict that eventually students could be responsible for making their own memory cues. Finally, while this technique was very effective, it could possibly have been improved by combining visual with verbal mnemonics. With this approach, even more of the information presented could be accessible and memorable for students.

The teacher-researcher at Site C, where stickers were used as an intervention, discovered that test scores declined during the fourth unit. This could be attributed to the flow of the unit being disrupted. The students did not have class during the scheduled second week of the unit

due to a holiday. Therefore, there was a two-week lapse in the unit. Also, due to personal family circumstances, the teacher-researcher was unable to teach the last class of the unit. A substitute teacher who was not comfortable with art, taught the class and held the final review before the unit test was given.

Giving stickers at the start of each class for the weekly oral reviews was very quick and easy to do. However, after scoring each of the unit tests, the teacher-researcher put one sticker for each correct answer on the students' art folders. For larger unit tests this became very time consuming.

If the intervention were repeated, perhaps different types or sizes of stickers could be worth a designated amount of points to shorten the tasks of applying the stickers to the folders. Another option would be to have a sticker chart on display and one sticker for each increment of five points could be given. This would reduce the amount of time used to award the stickers as well as the storage space needed for individual art folders. Students would also be able to see their progress posted in the classroom.

In conclusion, all three of the interventions worked well. However, even the best instructional technique would become mundane if used constantly. Using a balanced approach to teach information will keep it interesting to the presenter as well as students, thus ensuring active learners.

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APPENDICES

APPENDIX A

Elementary Art Teacher Survey
Unit 1 Memory Posttest - Site A
Unit 1 Memory Posttest - Site B
Unit 1 Memory Posttest - Site C

Date: _____

Elementary Art Teacher Survey

Please answer the following questions.

1. Was direct instruction the primary method of teaching stressed to you as an undergraduate?

2. What other types of teaching methods did you learn about as part of your undergraduate course work?

3. How often do you feel you use direct instruction in your teaching? (circle one of the following answers)

All the time Most of the time Rarely Never

Date: _____ 55

Elementary Art Teacher Survey

Please answer the following questions about student memory recall.

1. How often are the students unable to recall the concepts or procedures for the unit that was introduced the week before?

2. How often do you re-teach the unit concepts or procedures due to lack of student memory recall?

3. On the following scale, please indicate your frustration level with this problem by circling the appropriate number.

1=None 2=Slight 3=Moderate 4=High

Unit 1 Memory Posttest - Site A

Grant Wood

1. Who was our artist/culture we studied last week?
2. What year/time period did we discuss?
3. What country/area is our artist from?
4. What type of artwork did they create?
5. What materials did they use?
6. What materials did we use?

Unit 1 Memory Posttest - Site B

Element of Line

1. What art element did we discuss last week?

2. What materials did we use?

3. List 3 kinds of lines.

4. How do artists use line?

Unit 1 Memory Posttest - Site C

Line

1. Who has heard of the element of line?

2. Where in the world do you see line?

3. List at least 3 ways artists use line?

APPENDIX B

Unit 2 Memory Posttest - Site A
Unit 2 Memory Posttest - Site B
Unit 2 Memory Posttest - Site C
Unit 3 Memory Posttest - Site A
Unit 3 Memory Posttest - Site B
Unit 3 Memory Posttest - Site C
Unit 4 Memory Posttest - Site A
Unit 4 Memory Posttest - Site B
Unit 4 Memory Posttest - Site C
Semester Review - Site A
Semester Review - Site B
Semester Review - Site C
Assessment Rubric

Unit 2 Memory Posttest - Site A

Aboriginals

1. What is the name of the culture we have been studying?

2. What country do these people come from?

3. What type of artwork did they make?

4. Name 2 types of materials they used.

5. Name 3 types of materials we used for the art project.

Unit 2 Memory Posttest - Site B

Georgia O'Keeffe

1. What artist have we been learning about?

2. What kind of artwork did she make?

3. Name two places she lived and worked?

4. Describe her work.

5. Name three materials we used to create our artwork.

Unit 2 Memory Posttest - Site C

Dios Los Muertos

1. What event or holiday were these masks made for?

2. What country celebrates this event or holiday?

3. What were the people celebrating?

4. Name 3 things people would do during the celebration.

5. Is this holiday viewed as a happy or sad time?

6. Which insect plays an important role during this celebration?

Unit 3 Memory Posttest - Site A

Architecture

1. What is architecture?

2. Who is an architect?

3. What do architects need to design in their buildings?

4. Name three materials architecture can be made out of.

5. Name three materials we used for our art project.

Unit 3 Memory Posttest - Site B

Matisse Collage

1. What was the name of the artist we studied?

2. Where did he live?

3. What kind of artwork did he create?

4. What kind of shapes did he use?

5. Name two complimentary colors.

Unit 3 Memory Posttest - Site C

Plains Shields

1. Who originally made the shields?

2. What were they originally made from?

3. What did they use to decorate the shields? List two items.

4. What were the shields used for?

5. How did the Native Americans believe the shield would protect the owner? Give an example.

Unit 4 Memory Posttest - Site A

Kimonos

1. What was the culture we studied last week?

2. What year/time period did we discuss?

3. What was the name of the special clothing they wore?

4. Name 3 designs that are commonly shown on the clothing.

5. What material was it made out of?

6. What materials did we use?

Unit 4 Memory Posttest - Site B

Native American Amulets

1. What culture did we learn about for this project?

2. Where did these people live?

3. How did this culture use art to communicate?

4. Where did they get their art materials?

5. What did the toothpicks represent in our amulets?

6. What did the torn paper represent?

Unit 4 Memory Posttest - Site C

Turkish Tugras

1. What was the name of the art project you made?

2. Explain what is the content of the design?

3. What country did this idea originally come from?

4. What was the ruler of the country called?

5. Why did they call him "magnificent"?

6. What is the difference between "plain" and "illuminated"?

7. Which part of the design is decorated in a positive design?

Semester Review - Site A

Name:_____ Class:_____

Art Review

Station 1

1. What was the artist's name who painted this picture?_____
2. What type of building does the house remind you of? _____
3. What job do the people in the picture have?_____
4. What country is the artist from? (Circle one)
   Australia United States Japan

Station 2

1. What is the name of the people that created this artwork? "The _____"
2. Why do they use symbols?_____
3. What is a boomerang used for?_____
4. What country do these people come from? (Circle one)
   Australia United States Japan

Station 3

1. What is Architecture?_____
2. What does an architect do?_____
3. Name 3 types of architecture that you see in your town:
   _____ _____ _____
4. Name 3 types of materials you can see on architecture:
   _____ _____ _____

Station 4

1. What is the name of the special robe that we made?_____
2. What material are these robes made out of?_____
3. How many years have these robes been worn?_____
4. Name 3 designs that you would see on these robes:
   _____ _____ _____
5. What country did the people come from that wear these robes? (Circle one)
   Australia United States Japan

Semester Review - Site B

Name:_____ Class:_____

Art Review

Short Answer:

1. Draw 3 kinds of line.

2. Name one thing you can do with a line.

3. Which artist created this piece of artwork?

4. Name two places this artist lived.

5. Describe this artist's work.

6. Which artist created this piece of artwork?

7. Where did this artist live?

8. What do you call this kind of artwork?

9. What culture made this kind of artwork?

10. Where did this artist get his/her art materials?

Semester Review - Site B

Name:_____ Class:_____

Art Review
Part II

Matching:
Match the artist that best answers the question below. Write A, B, or C in the space provided.

A. Georgia O'Keeffe B. Matisse C. Native Americans

1. Which artist grew up on a farm?

2. Which artist believed all things in nature had a spirit?

3. This artist drew with scissors.

4. This artist loved to use organic shapes in collages.

5. Which artist lived in the desert?

6. This artist used symbols to communicate through artwork.

7. Which artist would have used colored paper and glue to make a picture?

8. Which artist would have used animal skin and porcupine quills to make artwork?

9. Which artist would have used paints and brushes to create a picture?

10. Which of these artists are you most like? Why?

Semester Review - Site C

Name:_____ Class:_____

1. In what country would you find designs like this one?

2. What event/celebration would you make this mask for?

3. Artists use line to show what in their pictures?
   A.
   B.

4. What material was this originally made from?

5. What were the people celebrating in this event?

6. Is this a Plain or Illuminated tugra?

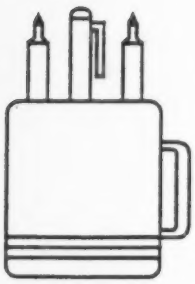
7. Where would you find these being used as decorations?

8. In which project did we discuss as a class, butterflies carrying peoples souls back for a celebration?

9. Is this a positive or negative design?

10. What did the Plains Indians believe was the real protection of the shields that they made?

Rubric



Looking for Supplies
0

Sketch
1

Still Working
2

Ready to Frame
3

Scale: Criteria:	0 Looking for Supplies	1 Sketch	2 Still Working	3 Ready to Frame
	None			
	None			
	None			
	None			
	None			

Name:_____ Class:_____

Date:_____ Lesson:_____

APPENDIX C

Unit 2 Instructional Song - Site A
Unit 2 Instructional Mnemonic- Site B
Unit 3 Instructional Song - Site A
Unit 3 Instructional Mnemonic - Site B
Unit 4 Instructional Song - Site A
Unit 4 Instructional Mnemonic - Site B

Unit 2 Instructional Song - Site A

We Are the Aboriginals!

We come from a country called Australia

Where kangaroos are well-known animals

For hundreds of years we wandered in the Outback

We are proud to be called the Aboriginals!

Our art tells our stories using symbols

Of where our families go and what they do

A boomerang is what we use to hunt our food

And we play cool music on our dijeridoos - ooh ooh!

Unit 2 Instructional Mnemonic - Site B

Georgia O'Keeffe

Georgia O'Keeffe, Georgia O'Keeffe,
Painter of flower and leaf.

Nature was her greatest love,
The ground below and the sky above.

She painted all day; she painted all night,
Georgia made her pictures big and bright!

Georgia O'Keeffe, Georgia O'Keefe,
Painter of flower and leaf.

Wisconsin New York New Mexico

Unit 3 Instructional Song - Site A

The Architecture Song
*To the tune of "Frere Jacques"

Architecture, Architecture
What are you? What are you?
I'm the buildings all around you,
Malls and schools and houses
To name a few, made for you!

Architecture, Architecture
Who made you? Who made you?
An architect designed me,
In different shapes and sizes
With colors too, to look nice for you!

Architecture, Architecture
I see you. I see you.
You're made with bricks and siding,
Concrete, glass and windows,
With big doors too, I like you!

Unit 3 Instructional Mnemonic - Site B

For MAT,
FLAT is where it's AT!

Silly phrase: **OR-CO-FRA**

(OR= organic, CO=collage, FRA=France)

Unit 4 Instructional Song - Site A

The Kimono Song
*To the tune of "London Bridge Is Falling Down"

The Japanese wear
Special clothes,
They are called
Kimonos!
The Japanese wear
Special clothes,
For their culture.

These long silk robes
Have been worn
For twelve hundred
Years or more!
These long silk robes
Have been worn
For tradition.

Most kimonos
Show nature,
Landscapes, birds,
Or a flower!
Most kimonos
Show nature,
Painted on them.

Unit 4 Instructional Mnemonic - Site B

Native American Art